

PATENT SPECIFICATION

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780,445



Date of Filing Complete Specification: Jan. 20, 1956.

Application Date: Feb. 7, 1955.

No. 3506155.

Complete Specification Published: July 31, 1957.

Index at Acceptance:—Classes 44, BE(4A4: 13A); and 89(I), A(2F: 7).

International Classification:—F06b.

COMPLETE SPECIFICATION

Improvements relating to Spring Clips for Attaching Shank-carrying Parts to Apertured Supports.

We, GEORGE SALTER & CO. LIMITED, a British Company, of 144 High Street, West Bromwich, Staffordshire, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement;—

This invention relates to spring clips for attaching shank or web-carrying parts to apertured supports, and is especially suitable, for example, for attaching to the body panel of a motor vehicle a name-plate, ornament or the like carrying at the back one or more shanks adapted to be passed through a hole or holes in the said panel. The invention, however, is applicable to clips for attaching to a support any other member having at the back one or more shanks or webs intended to be passed through a hole or holes in the support.

The object of the present invention is to provide an improved and simplified spring clip, for use as above referred to, which can be quickly and easily engaged with an aperture in a supporting part, and with a shank or web of the member to be attached so as to firmly hold the said member in place, and which allows for a certain discrepancy in the location of the hole or holes in the support, especially when used for attaching a member having two or more shanks at certain distances apart and intended for insertion in correspondingly-situated holes in the support. The improved clip is designed to be inserted into an aperture in a panel from the front of the latter and is therefore useful on assemblies where access from the back of the panel is either difficult or impossible.

According to the invention, a one-piece spring clip adapted to be used for attaching a shank or web-carrying part or member to an apertured panel or like support, consists of a resilient sheet-metal unit bent to

a substantially V-configuration having spaced spring side walls inwardly bulged or bent to hook-like form at their outer ends to provide transverse channel-sectioned terminal portions adapted, when the clip is inserted into an aperture in the panel or like support, to spring into interlocking engagement with the edge of the aperture, said spring side walls also having intermediate their side edges, parts pressed inwardly out of them so as to leave closed apertures in the walls, said parts being adapted to grip the shank or web of the part or member when said shank or web is inserted between the sides of the clip with the latter in position in an aperture in the panel or like support. By the term "closed apertures" is meant apertures having continuous unbroken edges that completely encompass the apertures.

The said inwardly-pressed gripping parts may be in the form of oblique friction grip detent lugs projecting into the space between the sides, at an acute angle relatively to said sides, with their free ends directed towards the converging closed end of the clip, the form and disposition of said detent lugs being such that, when a shank or web on the back of the article to be attached to the support is inserted into the aperture and between the sides of the clip, the said shank or web can freely slide over the ends of the detent lugs in frictional contact therewith, but the lugs bite into and grip the said shank if withdrawal of the latter is attempted. The ends of the detent lugs may be notched or serrated. Alternatively, the free ends of the detent lugs may be rounded so as to engage the shank or web only with a friction grip to permit of withdrawal of the latter from the clip.

In the accompanying drawings, one form of spring clip, in accordance with the invention, is illustrated in Figs. 1 to 3, and the same clip is shown in use in Figs. 4 90

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to 9. More particularly,

Fig. 1 is a perspective view of the clip;

Fig. 2 is a vertical cross sectional view; and

Fig. 3 is a side elevational view;

Fig. 4 is a longitudinal section showing an ornamental strip having two spaced-apart shank portions on its rear face attached to a supporting panel by means of two of the said clips;

Fig. 5 is a plan view showing the clips in position in the apertures of the supporting panel before the ornamental strip is attached.

Fig. 6 is a section on line VI-VI, Fig. 4;

Fig. 7 is a section on line VII-VII, Fig. 4;

Fig. 8 shows an alternative arrangement of the clips in the panel, for attaching an ornamental strip carrying two spaced-apart shanks.

Fig. 9 is a perspective view showing the spring clips used in conjunction with a slotted panel, for attaching a T-section moulding strip.

Fig. 10 is a sectional view illustrating a modified form of spring clip.

Referring to Figs. 1 to 3 of the drawings, the spring clip is formed from a strip of spring steel which is bent or folded transversely at about the middle of its length to produce a clip body of substantially V-shape, with a closed inner end 1 and resilient parallel-sided side arms 2, 2 diverging from said end 1 at a suitable angle, to give a tapering formation to the clip. The outer or free end portions of these arms 2, 2 are inwardly bulged or bent to a hook-like shape and provide transverse channel-sectioned terminal parts 3, 3. The outer walls, 4, 4 of these two channel-sectioned parts 3, 3 are in substantially transverse alignment, and constitute retaining lugs or flanges for co-operation with a face of the supporting panel when the clip is inserted into an aperture in said panel, as herein-after described. The inner end 1 of the clip is conveniently formed with a central hole 1a, as shown, to increase the resiliency of the side arms 2, 2.

Pressed or chopped out of each spring side arm 2 of the clip, towards the wider outer end of the latter, and so as to leave an aperture in the arm, is an oblique friction-grip detent lug 5 which projects into the space between the two side arms 2, 2 at an acute angle relatively to the respective side arm, for example, at an angle of about 45° to the central median line of the clip. The two detent lugs 5, 5 are situated directly opposite to one another and their outer free edges 6, 6, which are spaced apart laterally, are formed with a central notch 7. If desired, these outer free edges may be otherwise toothed or serrated,

having, for example, a central tooth of flat V-form and two side teeth of a shape equivalent to half that of the central tooth.

Referring now to Figs. 4 to 6 of the drawings, the use of the clip will be described in connection with the attachment of a shank-carrying ornamental strip 8 to a supporting panel 9. The ornamental strip 8 is provided at its rear side with two spaced-apart shank portions 10, 10, which have a rectangular cross-section and the panel 9 is provided with two correspondingly spaced-apart rectangular apertures 11, 11 adapted to receive the spring clips. In this arrangement the longer sides of both rectangular apertures 11, 11 are disposed parallel to one another, as are also the wider sides of the rectangular sectioned shanks of the ornamental strip.

In carrying out the mounting of the ornamental strip upon the supporting panel 9, a clip is inserted, from the front of the panel, into each aperture 11, 11 in said panel 9. The narrower inner end 1 of the clip is first introduced into the aperture 11 and the clip is pressed in an axial direction so that the spring arms 2, 2 are pressed towards one another, as their sloping outer surfaces slide over the longer edges of the rectangular aperture 11, until the transverse channel sectioned terminal ends 3, 3 of the side arms 2, 2 come into alignment with the panel 9, when the side arms 2, 2 spring outwards to cause said terminal ends 3, 3 to engage and interlock with the longer edges of the aperture 11, with the retaining lugs or flanges (formed by the outer walls 4, 4 of the channel sectioned parts 3, 3) overlying the front face 12 of the panel 9. When both clips have been inserted into the two apertures 11, 11 in this manner, as shown in Fig. 5, the shanks 10, 10 on the ornamental strip 8 are inserted through the apertures 11, 11 and into the mouths of the respective clips, and pressed rearwardly until the strip 8 lies close to the front face 12 of the panel 9, the retaining lugs or flanges 4, 4 of the clips being accommodated in recesses 13 in the rear face 14 of the strip 8 adjacent each shank. During the rearward axial movement of the shanks 10, 10 they pass between and contact the pair of detent lugs 5, 5 on each clip and ride over their outer free edges 6, 6 with sliding frictional engagement, but as the lugs 5, 5 are inclined towards the closed end 1 of each clip, the shanks 10, 10 can slide freely over them. Withdrawal of the shanks 10, 10, however, is positively prevented, as any attempted withdrawal results in the edges 6, 6 of the lugs 5, 5 biting into and gripping the shanks 10, 10 so that the ornamental strip 8 is firmly secured to the panel 9.

Instead of the rectangular sectioned

shanks 10, 10 of the strip 8 being disposed with their longer sides parallel and opposed to one another, they may have their shorter sides parallel and opposed to each other 5 and their longer sides in line. In this case the rectangular apertures 11, 11 in the supporting panel 9 would also be disposed with their longer edges in line, and the clips would be arranged with their ends opposed 10 to one another, as illustrated in Fig. 8.

The clips may also be used for attaching to a supporting panel a flanged member such as the T-sectioned moulding 15 shown in Fig. 9. In this case the supporting panel 15 9 is formed with a longitudinal slot 16 in which is inserted, in the manner hereinbefore described, the desired number of spring clips, indicated at A, at suitable spaced apart positions. The web 17 of the 20 moulding 15 is then inserted into the slot 16, and engages with the clips in the same way as a rectangular sectioned shank.

The clips can be used to effectively secure parts carrying shanks of other than rectangular section, such as square or circular 25 section, although a part carrying a single circular sectioned shank may require an additional dowel to prevent it from being turned in the clip; a part carrying a single rectangular or square sectioned shank will 30 be positively prevented from turning and will require no additional dowel.

By controlling the relative dimensions of the apertures in the supporting panel and 35 of the clip, a certain amount of float or free play of the clips in the apertures may be allowed, which in the case of a part or member carrying a plurality of shanks, will enable the shanks to align themselves with- 40 in the clips in spite of small discrepancies in the location of the apertures.

If desired the hole 1a in the inner end 1 of the clip may be large enough to permit a long shank part to extend through it.

45 In a modification, illustrated in Fig. 10, instead of the pressed or chopped out friction grip lugs 5 having free outer edges 6 adapted to bite into the shank if the latter is attempted to be withdrawn, the lugs 5 50 may have curled-back free end portions 18,

18, providing rounded surfaces for frictionally engaging the shank, so that the latter can be removed.

What we claim is:

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1. A one-piece spring clip, adapted to be used for attaching a shank or web-carrying part or member to an apertured panel or like support, consisting of a resilient sheet metal unit bent to a substantially V-configuration having spaced spring 60 side walls inwardly bulged or bent to hook-like form at their outer ends to provide transverse channel-sectioned terminal portions adapted, when the clip is inserted 65 into an aperture in the panel or like support, to spring into interlocking engagement with the edge of the aperture, said spring side walls also having, intermediate their side edges, parts pressed 70 inwardly out of them so as to leave closed apertures in the walls, said parts being adapted to grip the shank or web of the part or member to be attached to the panel or like support when said shank or 75 web is inserted between the sides of the clip with the latter in position in an aperture in the panel or like support.

2. A one-piece spring clip, as claimed in Claim 1, wherein the inwardly-pressed 80 gripping parts consist of oblique friction-grip detent lugs projecting into the space between the side walls at an acute angle to the latter such that the outer free end portions of said friction grip detent lugs are 85 adapted to engage and bite into and positively grip the shank to prevent withdrawal of the latter.

3. A one-piece spring clip, as claimed in Claim 2, wherein the transverse edges 90 of the outer free end portions of the friction grip detent lugs are notched or serrated.

4. A one-piece spring clip substantially as herein described with reference to Figs. 1 to 8 or to Fig. 10 of the accompanying 95 drawings.

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PROVISIONAL SPECIFICATION

Improvements relating to Spring Clips for Attaching Shank-carrying Parts to Apertured Supports.

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This invention relates to spring clips for attaching shank-carrying parts to apertured supports, and is especially suitable, for example, for attaching to the body panel of 105 a motor vehicle a name-plate, ornament or

the like carrying at the back one or more shanks adapted to be passed through a hole or holes in the said panel. The invention, however, is applicable to clips for 110 attaching to a support any other member having at the back one or more shanks intended to be passed through a hole or holes in the support.

The object of the present invention is 115 to provide an improved and simplified

spring clip, for use as above referred to, which can be quickly and easily engaged with an aperture in a supporting part, and with a shank of the member to be attached, 5 so as to firmly hold the said member in place, and which allows for a certain discrepancy in the location of the hole or holes in the support, especially when used for attaching a member having two or more 10 shanks at certain distances apart and intended for insertion in correspondingly situated holes in the support.

According to the invention, a one-piece spring clip, for co-operation with a shank 15 which is provided on the back of a member to be attached to a support and which is intended to be inserted into a hole in said support, consists of a resilient sheet metal unit bent to a substantially V-configuration 20 having spaced spring sides inwardly bulged or bent to hook-like form at their outer ends to form transverse channel sectioned terminal parts adapted, when the clip is inserted into a hole in a support to spring 25 into interlocking engagement with the edge of the hole, said spring sides having pressed out of them parts adapted to grip a shank on the back of the article to be attached to the support when inserted into the hole 30 and between the sides of the clip. The said gripping parts may be in the form of oblique friction grip detent lugs projecting into the space between the sides, at an acute angle relatively to said sides, with 35 their free ends directed towards the closed end of the clip, the form and disposition of said detent lugs being such that, when a shank on the back of the article to be attached to the support is inserted into the hole and between the sides of the clip, the 40 said shank can freely slide over the ends of the detent lugs in frictional contact therewith, but the lugs bite into and grip the said shank if withdrawal of the latter is attempted. The ends of the detent lugs 45 may be toothed or serrated.

In carrying out a convenient embodiment of the invention in connection with clips intended for attaching to the metal panel 50 of a motor vehicle, a name-plate, ornament or the like provided at the back with two or more spaced-apart shanks which are inserted into spaced holes in the panel, the number of clips employed is equal to the 55 number of shanks on the name-plate or the like, one for each shank and hole. Each clip is formed from a strip of spring steel which is bent or folded transversely at about the middle of its length to produce 60 a clip body of substantially V-shape, with a closed flat end and resilient side arms diverging from said end at a suitable angle, to give a tapering formation to the clip. The outer or free end portions of these 65 arms are inwardly bulged or bent to a

hook-like shape and provide transverse channel sectioned terminal parts. The outer walls of these two channel sectioned parts are in substantially transverse alignment, and constitute retaining lugs or flanges for 70 co-operation with a face of the supporting panel when the clip is inserted into a hole in said panel, as hereinafter described, and the inner walls of the said channel sectioned parts may diverge from the outer walls at 75 a suitable angle, as at about 30°, for example.

Pressed or chopped out of each spring side arm of the clip, near the wider end of the latter, is an oblique friction grip detent 80 lug which projects into the space between the two side arms at an acute angle relatively to the respective side arm for example at an angle of about 45° to the central median line of the clip. The two detent 85 lugs are situated directly opposite to one another with their free ends spaced apart laterally and directed towards the closed narrower end of the clip. Each detent lug may be of elongated form transversely with 90 straight parallel side edges, but the outer free edge is preferably toothed or serrated, having for example a central tooth of flat V-form and two side teeth of a shape equivalent to half that of the central tooth. 95

In carrying out the mounting of the name-plate or the like upon the supporting panel, a clip is inserted, from the front of the panel, into each hole in said panel which is to receive a shank. The smaller 100 end of the clip is first introduced into the hole and the clip is pressed in an axial direction so that the spring arms are pressed towards one another, as their sloping sides slide over the edge of the hole, until the 105 transverse channel sectioned terminal ends of the sides come into alignment with the panel, when the sides spring outwards to cause said terminal ends to engage and interlock with the edges of the hole, with 110 the retaining lugs or flanges (formed by the outer walls of the channel sectioned parts) overlying the front face of the panel. When the clips have been inserted into the several 115 holes in this manner, the shanks on the name-plate or the like are inserted through the holes and into the mouths of the respective clips and pressed rearwardly until the name-plate lies close to the panel. During the rearward axial movement of 120 the shanks they pass between and contact the pair of detent lugs on each clip and ride over their toothed edges with sliding frictional engagement, but as the lugs are inclined towards the closed ends of the 125 clips, the shanks can slide freely over them. Withdrawal of the shanks, however, is positively prevented, as any attempted withdrawal results in the teeth of the lugs biting into and gripping the shanks, so that the 130

name-plate or the like is firmly secured to the panel.

If there should be any small discrepancy in the location of the holes in the panel in 5 relation to the spacing or location of the shanks on the name-plate or the like, the shanks will align themselves within the clips.

In a modification, instead of the pressed 10 or chopped out friction-grip lugs having teeth on their ends which bite into the shank if the latter is attempted to be withdrawn, the lugs may have curled-back free end portions providing rounded surfaces 15 frictionally engaging the shank, so that the latter can be removed.

Also, instead of the narrower end of the V-shaped clip being completely closed, an

aperture may be provided therein for permitting of a long shank extending through 20 it.

In a further modification, instead of friction grip lugs being pressed or chopped out of the sides, to leave openings therein, the sides may have transverse grooves or 25 channels pressed in them to form inwardly projecting opposed transverse ribs having rounded gripping surfaces between which the shank is frictionally engaged, permitting of the withdrawal of the shank. The 30 grooves may extend to the extreme edges of the clip sides, being open-ended.

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Printed for Her Majesty's Stationery Office by Kingston Printers Ltd., Portsmouth. 335/3.—1956.
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2, from which copies may be obtained.

Fig. 1.

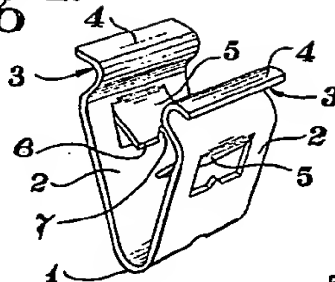


Fig. 2.

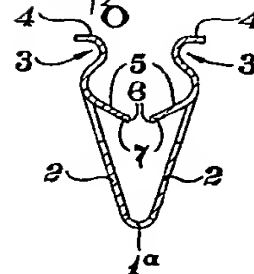


Fig. 3.

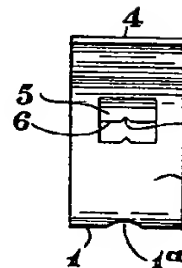


Fig. 4.

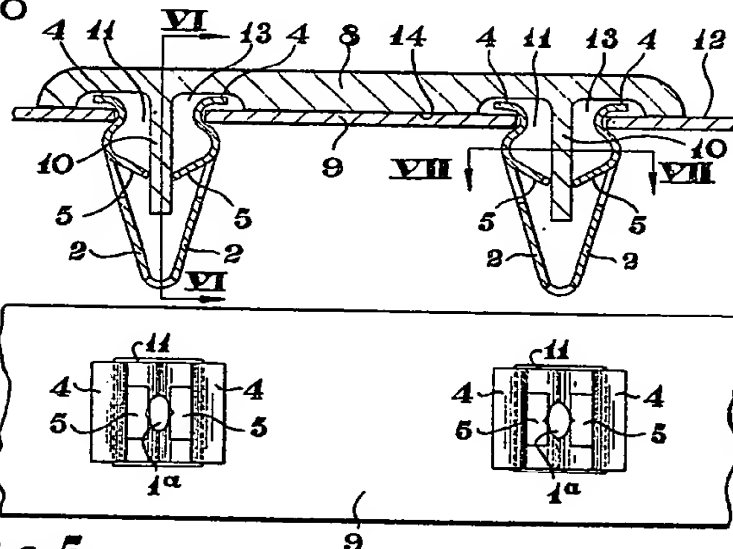


Fig. 5.

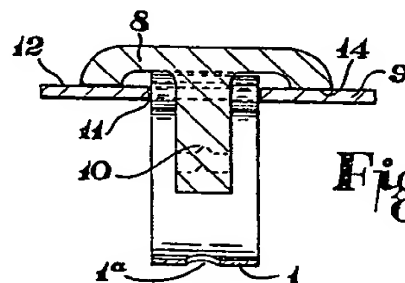


Fig. 6.

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2 SHEETS

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SHEETS 1 & 2

Fig. 8.

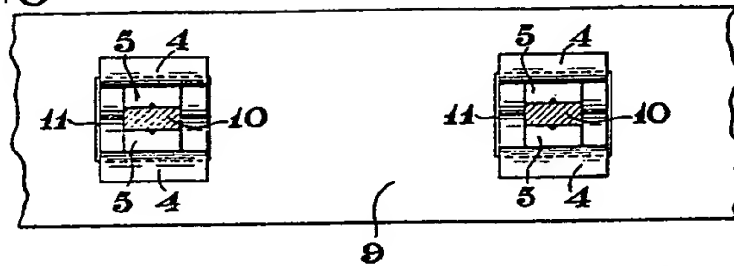


Fig. 7.

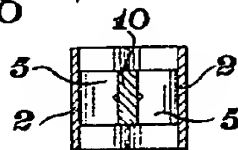


Fig. 10.

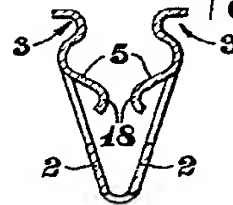
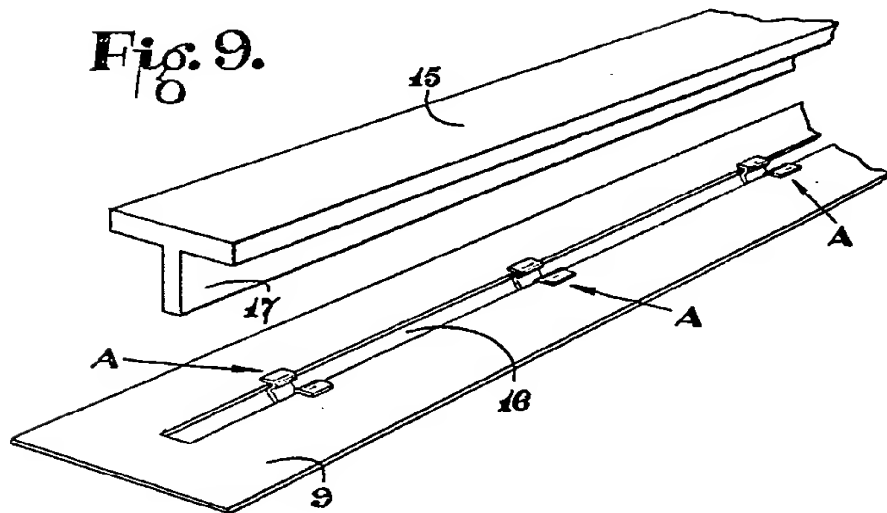


Fig. 9.



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 SHEETS 1 & 2

